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extended. The former imperfect description of the male reproductive organs has been corrected. The histology of the nervous system is more fully described and the results brought up to date according to Retzius and Lenhossék.

The description of the development of the earthworm from the egg is more fully given, and a description of the internal phenomena of cell-division is added.

The process of regeneration in the earthworm is incorrectly, or at least very imperfectly, described. "The earthworm is not known to multiply by any natural process of agamogenesis. It possesses in a high degree, however, the closely related power of regeneration; for if a worm be cut transversely into two pieces the anterior piece will usually make good or regenerate the missing portion, while the posterior piece may regenerate the anterior region" (page 73). Rarely or never will this happen in the earthworm! If the anterior piece be sufficiently long, *i. e.*, if it contains more than 24 segments it may then regenerate posteriorly. But the corresponding posterior end will not under these conditions regenerate. A shorter anterior piece will not regenerate. A posterior piece having lost less than 15 anterior segments may regenerate and replace all or part of those lost.

Few and unimportant changes seem to have been added to the description of the structure and physiology of the fern.

The brief descriptions of the unicellular forms are most admirable and a most important addition has been made to the older volume. A statement in the chapter devoted to yeast calls for correction (page 188). "It was supposed for a long time by Pasteur and others that yeast could dispense with free oxygen in its dietary. It now appears that this faculty is temporary only." * * * Pasteur himself on the contrary has given the results of a most elaborate series of experiments to demonstrate that yeast *can not permanently* dispense with free oxygen in its dietary.

Chapter XVI on bacteria and Chapter XVII on 'a hay infusion' give in few words a thoroughly good summary of the part played by bacteria in the world's economy.

The first edition of the General Biology filled

a unique place amongst our text-books and the new edition fulfills all the uses of the first edition. It brings the latter down to date and we venture to prophesy that it will meet with a hearty reception. The volume is a much-needed and most valuable addition to our best text-books. It is well printed and illustrated, and the descriptions of the authors are always clear and concise. T. H. MORGAN.

SCIENTIFIC JOURNALS.

AMERICAN CHEMICAL JOURNAL, NOVEMBER.

JACKSON and Grindley contribute further results of their work on the action of sodic alcohols on chloranil. They describe the methods of preparation, properties and reactions of a number of acetals derived from substituted quinones.

Orndorff and Cameron find that the substance formed by the action of sunlight on anthracene in benzene, is dianthracene and not a paranthracene. They obtained the substance in pure condition and made a thorough crystallographic study of it. Interesting points of resemblance and difference were brought out by a comparison of the measurements of the axial ratios and angles. All attempts to bring about the transformation by any other method than that made use of failed.

Hitherto all the determinations of the molecular weight of paranthracene have been made by the freezing-point method. The vapor-density method could not be used, as paranthracene is converted into anthracene at its melting point (244°). The results obtained by the freezing-point method varied greatly, and were very unsatisfactory, on account of the slight solubility of the substance in all the solvents used. The authors find that, by the use of the boiling-point method, using pyridine, anisol and phenetol as solvents, good results can be obtained.

Campbell has prepared copper oxide containing a small amount of palladium, and finds that the combustion of gases takes place at a lower temperature when he uses this mixture than when the oxygen is introduced in the form of gas.

Kastle suggests the use of the dichlor deriva-

tive of benzene sulphonamide as a reagent for bromine and iodine, in the place of chlorine water. When metallic bromides or iodides are decomposed by this substance, in the presence of carbon disulphide or chloroform, the solvents are colored, as they are when chlorine water is used. The substance is very stable and the reaction is extremely delicate.

Kremers has studied the effects of solvents upon the rotatory power of limonene. In some cases, as the dilution increases, the rotatory power of the limonene diminishes. He also found that limonene monohydrochloride, when in contact with water in a sealed tube, was slowly charged to terpin hydrate.

By the action of bromine on metanitriline, Wheeler obtained a substance in which the bromine is in the ortho position to the amido group. The nitro group influences the substitution in this case, for if aniline is treated with halogens, para and not ortho compounds are obtained. A number of derivatives of metanitriline were made and studied. A review, of recent articles on the dissociation of electrolytes as determined by experiments on solubility, is contributed by Humphreys.

J. ELLIOTT GILPIN.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES, BIOLOGICAL SECTION, NOVEMBER 11, 1895.

THE following papers were presented:

Prof. H. F. Osborn: 'A Memorial Tribute to Prof. Thomas H. Huxley.'

Dr. Bashford Dean: 'Notes of the Ancestral Sharks.' In this paper Cladoselachids were reviewed, and for the first time the structural characters of their vertebral skeleton, integument and suspensorium were given; and together with these features was noted the lack of claspers, shown in a dozen well-preserved ventral fins, as significant of the fertilization conditions of these early sharks. In this regard these Lower Carbon forms would correspond to the usual ichthyic type (as of *Teleostome* or *Lung-fish*). The total absence of a pelvic girdle in these early forms is also significant.

Dr. Arnold Graf: 'A Peculiar Growth Char-

acter in *Crepidula*.' This paper recorded the adjustment of the shell of the *Crepidula* to that of a scallop, *Pecten*, the margin of the shell of the *Crepidula* conforming exactly to the ridged character of the shell of its host.

BASHFORD DEAN,
Recording Secretary.

THE TORREY BOTANICAL CLUB.

AT the regular meeting of the Club held on Tuesday evening, November 12. Prof. Emily L. Gregory, Ph. D., of Barnard College, presented an historical sketch of the *Theories of the Origin and Nature of the Starch Grain*, the relations of our present views concerning the nature of growth of organized matter to these theories being specially dwelt upon.

The systematic study of the subject began with Nægeli, and all subsequent contributions were either based upon his conclusions or took them for the starting point. He recognized the two substances, starch-cellulose and granulose as composing the starch grain, and described the phenomena of the appearance and disappearance of the latter and the transportation of its substance. He referred its origin to the chlorophyll-grain. Schimper subsequently pointed out the existence of the two other bodies, leucoplastids and chromoplastids and traced relations between the former and the starch grain. In all work up to and including that of Schimper, the accepted distinctions between unorganized and organized matter were such that the starch grain was taken as the type of the latter, and Schimper denominated it as crystalloid substance; that is, one which, though really organized, resembles a crystal in some particulars. Observations of the phenomena of the starch grain thus became the basis for theories concerning the growth of organized substances, of which the starch grain was taken as the type. Recently, however, Meyer has published a work reviewing the subject, and demonstrating, apparently, that it is not a crystalloid, but a true crystal, hence unorganized; so that all theories of the growth of organized substance, based on our ideas of the starch grain fall, and we must begin to study the subject *de novo* if Meyer's views are correct.

H. H. RUSBY, *Rec. Sec.*